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REPORT TO RDT 5102

THE DESERT LOCUST CONTROL ORGANIZATION  
OF EAST AFRICA

A Survey of its Capabilities

By

G. E. Cavin

U. S. Department of Agriculture  
Agricultural Research Service  
Plant Pest Control Division

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"...and when it was morning the east wind brought the locusts... they covered the face of the earth so that the land was darkened and they did eat every herb of the land and all the fruit of the trees...and there remained not any green thing...through all the land..."

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## TABLE OF CONTENTS

	Page
Introduction	1
I      Organizational Structure - DLCOEA	3
II     Organizational Objectives	4
A. Locust Survey	5
B. Locust Control	7
C. Research and Methods Development	10
III    Budget and Finance	13
IV    Personnel	17
V    Equipment and Supplies	20
A. Vehicles	20
B. Aircraft	20
C. Insecticides	21
D. Other	22
VI   Relationships DLCOEA and Ministry of Agriculture	23
VII   DLCOEA vs FAO Regional Commissions	24
VIII   Recommendations	26
IX   Future Prognosis	31
Appendix I	33
Appendix II	34
Appendix III	35
Appendix IV	36
Appendix V	42
Appendix VI	52
Map	53
Acknowledgement	54



## INTRODUCTION

At the request of AID/Ethiopia and the Desert Locust Control Organization of East Africa (DLCOEA) the United States Department of Agriculture was invited to send a representative to East Africa. The purpose of the visit was six fold:

1. Assess DLCOEA's activities and make recommendations concerning AID's future relationship to the Organization.
2. Determine the proper relationship between national plant protection activities and the regional effort.
3. Determine the operational capabilities of DLCOEA and the national units in the event of a serious desert locust outbreak.
4. Determine whether or not the desert locust constitutes a present serious threat to agricultural production in East Africa.
5. Evaluate the request of DLCOEA for U. S. technical assistance over a longer period of time.
6. Make recommendations to DLCOEA in order to assist them in charting their future course of action.

At the third session of the FAO East African Locust Control Subcommittee held in Addis Ababa in October 1961, the concept of DLCOEA was initially developed. It was at a time when the UK Desert Locust Survey Organization had begun to phase out its activities. The AID/USDA Regional Insect Control Project had begun building up its aerial unit in East Africa, foreseeing a serious gap developing in control capabilities within the region with the departure of DLS.

The policy of the United States was not to replace DLS but to supplement the national units. However, since the desert locust does not recognize national boundaries, freedom of mobility of control teams is necessary for effective suppression. In times of locust plagues, national units working independently are simply not enough. Therefore, the idea of a regional organization was born. It was visualized that it would be composed of the best technically trained personnel of the seven affected East African countries. (This was later reduced to the present six when Sudan withdrew its support.)



On the first of October, 1962, the Desert Locust Control Organization for East Africa was formally activated. Although organized outside the framework of FAO, it was expected that FAO would provide technical advice and training when necessary and cooperate closely to promote effective control, survey and reporting throughout the entire desert locust habitat.

The United Kingdom and the United States both agreed to assist the infant organization. The UK provided equipment and insecticides of an estimated value of \$2,000,000. The United States, although it did not at that time provide direct financial support to DLCOEA, agreed to make available, on a regional basis through bilateral agreements with contracting Governments, personnel, equipment, and materials and deploy and use U. S. personnel, equipment and insecticides to effect this aid to the greatest advantage. In June, 1965, the U. S. turned over to DLCOEA the assets of the Regional Insect Control Project, which included one DC-3 aircraft and two Cessna 185 aircraft with spray equipment and 50,000 gallons of insecticide.

It was later determined that DLCOEA could not financially support the maintenance and upkeep of the DC-3 aircraft so it was returned to the U. S. Operation's Mission to Ethiopia with certain added equipment which had been purchased with DLCOEA funds. When returned to AID/Ethiopia a provision was made that it would again become available in the event of a locust emergency. However, in the spring of 1968, it was wrecked on landing at an isolated airstrip in Ethiopia.

On May 3, 1968, prior to my May 5 departure from the U. S., Dr. Bredo, UNDP New York, telephoned to discuss an urgent request for supplementary funds submitted by FAO Rome in view of the critical locust situation in the Middle East and East Africa.

Enroute to Ethiopia, visits were made with Dr. Peter Haskell and his staff at the Anti-Locust Research Center, London, England, and with Mr. Gurdas Singh, FAO Locust Control Specialist, Rome, Italy.



I - Organizational Structure - DLCOEA

In accordance with the convention establishing DLCOEA, the Organization is governed by a council consisting of one delegate from each member government. The member governments are Ethiopia, Somalia, Kenya, Tanzania, Uganda and France (French Somalia). Each delegate has a single vote and all decisions of the Council, except for specific subjects as stated in the convention, are by majority vote. The Council elects from its members a chairman and two vice-chairmen who hold office for one year but may be re-elected. The Council meets once each year in regular session but the chairman may convene special sessions if circumstances require.

The Council appoints a Director who is the Chief Executive Officer of the Council. He is supported by two Associate Directors appointed by the Council. All other staff appointments are made by the Director. (See Appendix I, Organizational Chart)



## II - Organizational Objectives

The objectives of the Organization as outlined in the charter are:

1. Promote the most effective control of the desert locust in the Region.
2. Offer its services in the coordination and reinforcement of national action against the desert locust in the region.

In order to fulfill these objectives, the Organization was to engage in the following activities:

1. Maintain reserves of anti-locust equipment and supplies and direct the use of such reserves to assist national units when faced with desert locust populations beyond the national units' capacity to control.
2. Conduct aerial operations in areas where such operations are of greatest benefit to the region as a whole.
3. Conduct operational research to raise the efficiency of control and survey.
4. Initiate and conduct training programs to fit personnel from the region for service within the Organization.



#### A - Locust Survey

The first indication of a build-up of desert locust populations in East Africa was in September of 1967 when scattered solitariform locusts were observed along the Red Sea Coast of Ethiopia between wadi Wakiro and the border of Sudan. Subsequently, a joint UNDP/DLCOEA survey carried out in this area between October-December reported isolated but dense hopper bands in the Durama and Akbanazuf wadis south of Hasmet.

In early November first to fifth instar transient hoppers were observed in cultivated areas near wadi Durama with three bands showing definite gregarious tendencies. During the latter part of November and throughout December isolated but dense bands of hoppers were found within a 200 square mile area between wadis Durama and Akbanazuf. Fledglings began to appear in late November and a transientform swarm was reported near Gulbub the first week of December.

In Somalia between January and April scattered first to fifth instar hopper bands were observed in an area of 1000 square miles along the northern coast between Zeila and Bulhar. In March one small thin swarm and a small but very dense swarm were observed depositing eggs near Karure. On the 19th of March a pink swarm was observed moving northeast which took three hours to pass over Lukhaya. On the 21st of March a mainly mature population with isolated first instar hoppers was found concentrating between Lukhaya and Loyada. By the end of March it was estimated that between 100 and 200 million locusts were milling about in an area of 100 x 35 kilometers.

Of the 50 odd swarm reports in Ethiopia during May - early June, (see map I) many were undoubtedly duplicates. A more realistic figure would perhaps be 25-30 individual swarms of which five or six later proved to be the migratory locust, Locusta migratoria, or mixed swarms of the desert locust and the migratory locust. At the same time a light scattered population of immature adult desert locusts occurred over several hundred square miles.

In the northern Somali peninsula during this same period 10 to 12 swarms were believed to exist.



Most of the swarms reported in Ethiopia and Somalia during May - early June were relatively small, one to ten square miles, though some were fairly dense. By mid June several dense, moderate sized swarms had penetrated the Ethiopian highlands near Asmara. Egg laying was underway at lower elevations and some hopper bands had formed near Barentu, Teseney and Dire Dawa .

An analysis of operations and resultant locust conditions has revealed that during the "reign" of the former Director of DLCOEA, aerial surveys were generally relied upon to detect swarms or scattered adult locusts and hopper bands. This almost complete emphasis on aerial survey was proven unsatisfactory as evidenced by the large number of hopper bands detected in the coastal area of Ethiopia north of Massawa during the winter of 1967-68. Swarms were known to occur in the breeding belt of northeastern Sudan in the fall of 1967. Their progeny undoubtedly filtered into Ethiopia to greatly supplement scattered solitary locust populations already known to occur in this region. Although, limited ground reconnaissance had been carried out north of Massawa, it was apparently not on a scale sufficient to detect the rapid population build-up.

Further evidence of need for greater emphasis on ground surveys is indicated by the swarms which apparently developed in the vicinity of Tendaho and Mille River in May, 1968. When first observed, they were of a very light pink color and soft of body. They remained in these areas for several days. Although there is postulation that these locusts originated in Somalia, the evidence seems to be to the contrary.

These, plus swarms entering the Tacazze Valley and penetrating the escarpment to Decamere just south of Asmara during early May, possibly also originated from undetected breeding in Ethiopia.

Similarly, undetected breeding occurred in the northern areas of the Somali peninsula in the fall of 1967 and led to the necessity for large scale control during the winter of 1967-68. Escapes from this control program formed swarms which invaded Ethiopia in late April-June 1968 supplementing existing populations.



It is recognized that during the past year emphasis on ground reconnaissance has appreciably increased. However, since most vehicles in use were purchased prior to 1962 and adequate ground reconnaissance generally necessitates off road driving over extremely rough terrain, vehicles cannot be expected to satisfactorily perform more than a few years at the most. It is therefore not unrealistic to expect personnel to stay close to established roads and villages when forced to utilize worn-out vehicles. (Appendix II list of vehicles).

#### B - Locust Control

The operations conducted by DLCOEA in cooperation with the national locust control units in Ethiopia and the Somali Republic, and the U. S. Regional Insect Control Project, resulted, during the early months of the functioning of the Organization, in the elimination from the region of all significant desert locust populations. This success, together with intensified control action stimulated by FAO in other sections of the desert locust habitat, was instrumental in creating a recession in desert locust populations.

The FAO Technical Advisory Committee at its November 1962 meeting in Nairobi recorded its view that:

"The present desert locust situation offered an unprecedented opportunity for securing far reaching effects on the development of the desert locust plague by concerted and effective action against the remaining desert locust populations which, if proper means were available, could result in the virtual elimination of swarming populations from the whole of the invasion area for the first time in recorded history."

Desert locusts again began showing signs of population build-up in 1967. In the winter of 1967-68 control operations were conducted in the northern coastal areas of the Somali peninsula and the northern Red Sea coast of Ethiopia by DLCOEA in cooperation with the national units. A representative of the Anti-Locust Research Center, London, England,



Mr. C. F. Henning, viewed the operation in Ethiopia and was impressed with its success. He reported less than five percent escapes. (Present evidence indicates that although good control was obtained, escapes exceeded five percent). Apparently control was not as successful in Somalia as evidenced by the reports of swarms apparently produced in this area by mid May, 1968 (see map I). However, much of this can apparently be contributed to the serious lack of trained personnel and equipment by the Somali Republic national unit.

At this same time, control activities were being undertaken on the Red Sea Coast just north of Ethiopia by the Sudan National Unit and on the Arabian peninsula Red Sea coastal area by the Saudi Arabian National Unit under the direction of FAO. The Saudi Arabian operation was also viewed by Mr. Henning who estimated as many as 50 percent escapes which moved back into the Tihama of north central Arabia to breed. This is not meant as an inference that FAO failed in its duty for the facts are quite the contrary. Although Saudi Arabia now has 82 so-called locust control teams, they seriously lack personnel having technical competence.

Unfortunately, during this period the FAO advisor stationed at Hodeida, Yemen, was forced to return to Jeddah due to the unsettled political situation and it is doubtful that much, if any, control work was undertaken on the many hopper bands known to occur in the Yemen at the time.

Similarly, South Yemen has only one locust officer who doubles as a General Plant Protection officer. He, therefore, confines most of his activities to cropland areas and it's doubtful if he often gets into the breeding belt of the Hadhramaut.

Swarms began appearing in Ethiopia in late April. An unusual weather pattern, winds from the Southeast across the Danakil, brought swarms into the escarpment area of Ethiopia from Dessie almost to Asmara (see map I). These were probably supplemented by swarms being brought down from northern Ethiopia, and possibly the Sudan by winds from the north penetrating south almost to Massawa. Heavy rains in the Danakil and the escarpment created favorable breeding conditions.



In late April one Ethiopian Ministry aircraft supplemented by one aircraft of DLCOEA began control operations against three swarms near Dire Dawa. A second Ministry aircraft began controlling swarms at Tendaho plantation and Mille River. Later, it was learned that the Ministry had failed to renew their aircraft insurance so both Ministry aircraft were soon out of operation. This entailed DLCOEA to assign three of their aircraft to the Ethiopian escarpment leaving them vulnerable to the south. As soon as the Ministry aircraft were again in service, DLCOEA redeployed one Cessna aircraft to Hargeisa, Somalia for survey and control, set up a camp at Borama, Somalia, kept a Beaver and the Aero Commander at Asmara for work in the escarpment and a Cessna at Nairobi, Kenya to take care of any swarms penetrating to the south. The remaining two Beavers were also in Kenya. One was in Nairobi for extensive repairs and the second was finishing a cotton spraying contract. The Ministry aircraft were stationed at strategic locations in the Danakil and along the escarpment for reconnaissance and to spray swarms coming from Somalia and the Yemen before they could penetrate the escarpment.

All bran bait available with the Ethiopian National Unit was remixed in early June and along with remaining supplies of BHC dust delivered to points where egg laying was considered most likely to occur. DLCOEA's supplies of both bait and dust were practically nil at the time.

In June, large bands of first to fifth instar Locusta migratoria hoppers were being controlled by Ethiopian Ministry of Agriculture aircraft near Tendaho. One Ministry aircraft was moved to Macalle and later to Axum to control swarms in the Tacazze Valley. One Ministry of Agriculture aircraft also went to Asmara to assist DLCOEA in controlling swarms in that vicinity.

During this entire period, one pilot actually carried out the bulk of the aerial spraying conducted by DLCOEA. He is an Ethiopian.

Both foreign pilots must be considered excellent. However, some confusion in lines of authority have created difficulties. In order to improve total efficiency and maximize performance it appears highly desirable to designate an overall field supervisor, well versed in aerial application to coordinate all field activities. At the present time there seems to be too many conflicting orders directed to both the aerial and ground units.



C - Research and Methods Development

The following studies are proposed for the 1968-69 fiscal year. All are continuations of projects previously initiated.

1. Quantitative Field Surveys

Objective: To study populations of the desert locust synoptically so as to distinguish between real and virtual concentrations.

2. Light Traps

Objective: To study the migration of army worms, Spodoptera and night migration of desert locusts.

Mercury vapor light traps are operated at permanent and temporary field stations throughout Ethiopia and Somalia under the direction of Dr. E. S. Brown, EAAFRO, Kenya.

3. Development of Aircraft Spray Gear.

This is a joint endeavor sponsored by ALRC, DLCOEA and the UNDP. The UNDP has allocated \$4000 US for continuation of this project.

4. Spray Collection

Objective: Study the distribution of spray in relation to droplet size.

5. Toxicity of Insecticide

This title is really a misnomer because in actuality, the project primarily involves the screening and field testing of new insecticides of known toxicity against the desert locust, to determine the potential value of the insecticides as control agents, and determine the degree of phytotoxicity, if any, to plants characteristic of East Africa.

6. Rearing of Desert Locust

This activity is confined to rearing of small numbers of desert locusts for use in insecticidal screening tests.

7. Analysis of Morphometric Data

Objective: To investigate from the study of the collection of desert locust samples accumulated over 15 years the biometric



variability and their relations to locality and conditions of rearing. During the past four years some 200,000 character measurements have been reduced to 14,000 characters and tape punching for electronic computation has been completed by the Imperial Ethiopian Government, Naval Base, Asmara, on a repayment basis. Processing is to be conducted in the U.K. with an anticipated completion date of December 1968.

#### 8. Weather in East Africa

Objective: To continue investigating the weather system in Eastern Africa, particularly those on the meso-scale which result in the Red Sea Convergence Zones.

Arrangements are being made for a qualified meteorologist to be engaged from the U.K. Ministry of Overseas Development with possible assistance from the World Meteorological Organization.

#### 9. Phase Variability of Internal Organs

Objectives: Study variation of the desert locust under varying environmental conditions.

A fellowship was awarded by the U.K. Ministry of Overseas Development for this work through 1969. DLCOEA is to provide laboratory facilities in Nairobi and house rent for the staff.

Of the nine Research and Methods Development Projects, Activity #2 entitled "Light Traps" logically falls under the heading of survey. Although principally aimed at army worms, it provides a valuable service to general pest control in East Africa as a whole. The total financial outlay is small. It is merely a secondary activity for personnel already on the roles. The major fund outlay involves the purchase of traps and the purchase and recharging of batteries.

Activities #3 and #4 "Development of Aircraft Spray Gear and Spray Collection" are of a highly technical nature requiring costly sophisticated equipment and personnel trained in a variety of scientific fields. These types of studies are being conducted in a number of research centers throughout the world. If DLCOEA is to continue this project, they should limit their activities to the provision of aircraft and pilots when



available as they cannot afford nor are they staffed or equipped to conduct the detailed technical studies required.

Activity #5, "Toxicity of Insecticides."

Screening and testing of insecticides is the research field in which DLCOEA should be concentrating. In view of the proposed FAO/WHO pesticide tolerance limitations on or in agricultural products and the interest in foreign export of East African agricultural products particularly meat, pesticide residue difficulties may soon be experienced if almost complete reliance on the chlorinated hydrocarbon insecticides is continued. Therefore, new, improved, less persistent materials should be continually under test in order to find suitable substitutes for those presently in use.

Activity #7, "Analysis of Morphometric Data," has continued for five years. Little data has been developed which has field application. Both DLCOEA and the Anti-Locust Research Center agree that this project should be terminated.

Activity #9, "Phase Variability of Internal Organs," is a basic research endeavor. If continued, perhaps this study could more logically be conducted at one of the national universities where adequate laboratory facilities and equipment are presently available. The present investigator's contract expires June 30, 1968 and there is no indication that DLCOEA plans to continue this work.

At the 13th regular session of the DLCOEA Council held in Nairobi June 11 to 14, the Technical Advisory Committee recommended and the Council accepted a provision that all research projects, except those determined to be of direct benefit to locust control, be held in abeyance during the present locust upsurge.



III - Budget and Finance

The Convention establishing DLCOEA decreed that member nations would be assessed yearly as follows:

Ethiopia	12%	33,600	lbs.	E.A.
France	3%	8,400	"	"
Republic of Kenya	55%	154,000	"	"
Somali Republic	3%	8,400	"	"
Republic of Tanzania	20%	56,000	"	"
Republic of Uganda	7%	19,600	"	"
<b>Total</b>		<b>280,000</b>	lbs.	E.A.

At the eighth regular session of the DLCOEA Council held at Dar Es Saloam Tanzania, July 8-9, 1966, member nations agreed to amend the scale of contributions to reflect the following:

Ethiopia	14.4%	30,240	lbs.	E.A.
France	3.6%	7,560	"	"
Republic of Kenya	46.0%	96,000	"	"
Somali Republic	3.6%	7,560	"	"
Republic of Tanzania	24.0%	50,400	"	"
Republic of Uganda	8.4%	17,640	"	"
<b>Total</b>		<b>210,000</b>	lbs.	E.A.

Gross budgets during the year since conception of DLCOEA have generally reflected a downward trend as is shown in the following:



Year	Gross Budget	Member Nation <u>Contributions</u>	9 Month Budget
1962/63	240,000 lbs. E.A.		Lbs. 15,125 from U.K.
1963/64	269,855 "	"	Lbs. 14,855 from U.K.
1964/65	253,074 "	"	Lbs. 11,746 from U.K.
1965/66	316,839 "	"	Lbs. 76,829 to be met from past year's savings
1966/67	245,190 "	"	Lbs. 35,000 to come from reserve funds and income from general crop spraying
1967/68	230,000 "	"	Lbs. 20,000 to be met from contributions from other sources
1968/69	229,250	Proposed	
1968/69	45,000	Supplementary Budget	

The 1968/69 regular budget is as follows:

Personnel Salaries	109,070	Lbs. E.A.
Travel and Transport (including Conference Expenses, Subsistence, etc.)	30,676	" "
Equipment and Supplies (Training including trainee salaries)	3,350	" "
Building Maintenance	3,574	" "
Aircraft Operation (Gasoline, oil, etc.)	23,810	" "
Aircraft Maintenance	5,000	" "
Vehicle Operation (Gasoline, oil)	8,200	" "
Vehicle Maintenance	5,000	" "
Labor	2,550	" "
Postal Service	8,800	" "
Research Projects	2,800	" "
Insurance	2,750	" "
Official Entertainment	12,570	" "
Miscellaneous	200	" "
Emergency Fund (Reserve)	5,900	" "
	5,000	" "
Total	229,250	Lbs. E.A.



The budget provides for a net increase of three personnel over the 1968 budget proposal bringing the total personnel to 146. This includes one pilot and one aircraft engineer trainee. (The budget proposal appears somewhat ambiguous in this respect since there are presently 180 full time employees on the roles and it is anticipated it will continue at this or a higher level in 1968/69.) Although the permanent salary account shows an increase of 7,300 Lbs. it is more than offset by a decrease of 9,083 Lbs. as a result of replacing four expatriates with nationals. Also, there is a reduction of training costs of nationals by 2256 Lbs. through the completion of training of three of the five trainees and their being absorbed into the permanent organizational structure. Sizeable increases occur only in travel and transport 5,636 Lbs, building maintenance 1,205 Lbs. and insurance 1,998 Lbs. Approximately two thirds of these increases are offset by corresponding decreases such as equipment and supplies 850 Lbs., vehicle maintenance 650 Lbs., research projects 3,050 Lbs., and miscellaneous 900 Lbs.

As the budget exceeds the contributions by member nations, approximately 19,000 Lbs. must be realized through economy in operation, additional revenue derived from engaging in general pest control activities on a profit making basis, or utilization of reserve funds. There is presently a reserve balance of 73,000 Lbs. plus 11,000 Lbs. in a FAO trust fund. Further, the budget makes no allowance for depreciation of aircraft, vehicles or control equipment or the replenishment of depleting insecticide stocks.

Due to the necessity to replace worn out vehicles, replenish insecticide supplies, etc., in order to capably handle the present upsurge in desert locust populations, a supplementary budget was also prepared. It amounts to 45,000 Lbs. to be utilized as follows:

Replacement of Vehicles	12,000 Lbs.
Insecticide	18,000 Lbs.
Radios (Aircraft) (1)	12,000 Lbs.
Camping & Scientific Equipment	3,000 Lbs.

(1) Aircraft radios have to be replaced with single side band sets.



On the advice of the Technical Advisory Committee this was later increased by 79,990 Lbs. broken down as follows:

Personnel	10,239	Lbs.	E.A.
Labor	21,762	"	"
Travel and Allowances	7,689	"	"
Insurance	1,000	"	"
Vehicle and Aircraft			
Operation and Maintenance	16,000	"	"
Replacement Vehicles	22,000	"	"
Miscellaneous Equipment	1,300	"	"

Member countries, due to the necessity to strengthen their own national units, were unable to contribute more than 210,000 Lbs., FAO authorized the release of 11,000 Lbs. in the trust fund. The Council authorized the release of 48,000 Lbs. from the DLCOEA reserve fund and an appeal for assistance was made to the USA, UK, France, FAO, UNDP and OXFAM to make up the balance of the requirements. The U. S. responded in less than 24 hours with a grant of \$200,000. The UK indicated ability to provide personnel including possibly pilots and aircraft engineers. France indicated possible ability to provide a helicopter and pilot and one field supervisor. The UNDP dispatched a representative to Addis Ababa to determine the extent of additional assistance required.



IV - Personnel

In its initial stages the Directorate and supervisory and technical staff was largely made up of expatriates, most of whom had been members of the former British Desert Locust Survey Organization. These have gradually been replaced by nationals of the participating governments after completion of training. Although there are still a number of expatriates in the Organization, they are generally pilots, mechanics and accountant staff. Only one field locust officer and two scientists remain. One of the scientist's contract expires the end of July. The Chief Scientist is expected to remain at least one more year.

Staff members of the Anti-Locust Research Center, London, have spent and continue to spend considerable periods of time as observers and technical advisors to DLCOEA. The expenses of members of ALRC are paid in full or in part by DLCOEA when they are assigned to the regional organization.

Personnel salaries alone constitute approximately 1/2 the total normal income. When regional allowances, housing, flight pay etc., are included, this is increased to nearly 70 percent of the total proposed budget. A close look, therefore, needs to be taken at certain positions, especially those in administrative categories, to determine if an excess exists beyond actual requirements.

The special commission, appointed by the Council to assess DLCOEA suggested that the bases at Diro Dawa, Mogadiscio and Nairobi be closed, except that the aircraft maintenance facility be retained at Nairobi and one locust officer remain at Diro Dawa to act as liaison with the Ethiopian Ministry of Agriculture. They also suggested that many employees be laid off during recession periods and rehired during periods of locust outbreak. In view of the vast area served by DLCOEA it is difficult to reconcile these recommendations. Diro Dawa is second only to Hargeisa, Somalia in strategic importance. The maintenance of liaison with the Somalia Ministry of Agriculture and survey of the Indian Ocean coastal area and area south of the Ogaden necessitates the presence of a small staff at Mogadiscio. The Nairobi base handles Kenya,



Tanzania and Uganda who together provide the bulk of the contributions. This three-country area is potentially the most hazardous in East Africa from the standpoint of possible economic damage to crops by the desert locust. Also, to lay off field oriented personnel, including experienced drivers, who in many cases carry the bulk of the workload for field reporting and ground control, could wreak havoc with the organization. A more logical approach would appear to be to reduce headquarter (Regional) staff by elimination of some positions and reassignment of others to the field, plus a detailed evaluation of all budgeted field positions and elimination of those not fully justified. (Mr. Jean Roy, member of the special commission and French delegate to the DLCOEA Council, agreed at the Nairobi meeting that action on most commission recommendations should be held in abeyance during the present locust emergency.)

Leadership at Dire Dawa is weak and needs strengthening. It is understood the same is true at Mogadiscio. Perhaps the leadership required could be found from personnel presently handling administrative duties in Asmara. (Steps along this line are presently being taken by the DLCOEA Director.)

The aircraft pilot situation is critical. Of the four licensed pilots only three are considered qualified for spraying. The one trainee pilot, with diligent work, could obtain his Kenya commercial license within about two months. It appears doubtful that this will be accomplished. Consideration is also being given to the hiring of another pilot who is a Uganda National. If hired, he will require training in spraying and dusting.

Overtures are being made by DLCOEA to the U.K. Ministry of Overseas Development to provide two years of training for one entomologist, one chemist, one meteorologist and three administrative assistants (Assistant Executive Secretaries). There is a definite need for trained entomologists in the organization. The need for a chemist and meteorologist are doubtful. An entomologist with adequate course work in meteorology could effectively handle the meteorological aspect of the



work under the guidance of the Chief Scientist. He could also carry out the pesticide screening and testing for which a chemist is desired. If specific chemical analyses are needed the work can be conducted, on a reimbursable basis, at the several chemical laboratories that exist in Asmara and other major East African cities.

Certainly at this time there appears to be no justification for employment of additional administrative staff. (As locust officers in charge of operation bases are referred to as executive secretaries, some confusion exists as to who is a field officer and who is on the administrative staff. A differentiation in titles appears warranted.)

The Commission report suggests that DLCOEA look toward the U.K., U.S.A., and France to obtain suitable locust control specialists. At the present time DLCOEA does not have sufficient numbers of technically trained personnel. Also, they cannot afford to support large numbers of personnel in training. It would appear desirable, therefore, for the U.S. to consider supplying a locust control specialist for a period of one and preferably two years perhaps coupled with one or two national entomologist trainees also at least partially U.S. supported.



V - Equipment and Supplies

A - Vehicles

As can be seen by the vehicle inventory (Appendix IV) more than two-thirds of DLCOEA's landrovers, which are utilized for ground control and scouting purposes, are at least six years old. Many of these are in such poor condition that they cannot be utilized in the field. Of those assigned to the field, many are so badly worn that personnel operating them are reluctant to leave main roads or stray far from settled communities.

Of the 29 load carrying vehicles owned by DLCOEA over four-fifth's are at least five years old. Although many trucks in this part of the world are operated continuously over a longer period of time, they generally travel over established roads and trails. Much of DLCOEA's work initially cross country travel over hills and wadis carrying heavy loads of insecticides, gasoline and equipment thus appreciably reducing their operational life.

The condition of DLCOEA's fleet of vehicles is probably one of the major contributing factors in the rapid, undetected build-up of locust populations on the Red Sea coast of Ethiopia and the northern Somali peninsula. Later, control programs in these areas were hindered due to frequent vehicle breakdowns, preventing insecticides and treating equipment arriving at strategic locations in time to prevent escapes. These escapes "kicked off" the swarms which invaded the Ethiopian escarpment and highlands in April-May. Provision by the U.S. to provide 20 pickup trucks and five 2-1/2 ton trucks will provide temporary relief. However, it is vital that in the future DLCOEA make provision in their regular budget for depreciation and orderly vehicle replacement.

B - Aircraft

The DLCOEA aerial unit consists of six aircraft; three single engine Dehavilland Beavers, two single engine Cessna 185's, and one twin engine Aero Commander. The Beavers, capable of carrying heavy loads off short airstrips, do the bulk of the aerial spraying. The



Cessnas equipped with belly tanks and micronaire spray units which create considerable drag and thus reduce maneuverability are generally confined to use in the less hazardous spray areas, general crop spraying and reconnaissance. The Aero Commander is utilized strictly for reconnaissance and hauling of personnel and supplies.

A readjustment in the type of aircraft and aerial spray equipment utilized by DLCOEA may be appropriate. All planes owned at present are valuable and it might be economical to trade some of them for later models of better adapted aircraft. This is not urgent; therefore, it could be studied during the coming year.

(At the present time, an inside tank is being installed in one Cessna to replace the present Sorensen unit. This should reduce drag and provide for more maneuverability.)

#### C - Insecticides

A cursory review of the inventory of insecticides (Appendix III) available when coupled with quantities on hand with national units would indicate that East Africa is presently prepared to meet most any desert locust emergency. Unfortunately, this is not the case. Much of the liquid material on hand is crystallized. This does not necessarily mean it is not useable. With the application of low heat and/or violent agitation, much of the crystallized insecticide can be returned to useable form. Unfortunately, DLCOEA locust officers and warehouse foremen have in many cases been decanting the liquid from the drums and discarding the crystalline residue. This action has appreciably reduced and in some instances negated the percentage active insecticidal material.

The emulsifiable concentrates are no longer suitable for use with water since the emulsifying agents have broken down.

Many of the insecticide drums have rusted and the lacquer linings eaten through allowing the insecticide to come in contact with the raw metal which creates acids breaking the insecticides down.

Practically the entire DLCOEA stock of insecticides is the long residual chlorinated hydrocarbon type. These should not be utilized



on crop land or pastures grazed by livestock. The increasing interest in the export of East African agricultural products, especially meat to Europe, could be seriously impaired by wide spread use of chlorinated hydrocarbon insecticides on pasture lands in view of the recent world-wide tolerances proposed by the Joint WHO/FAO Committee on Pesticide Residues. (The immediate problems have been alleviated to some extent by the agreement of FAO to provide DLCOEA with 2000 gallons of malathion.)

An additional problem exists in deep, narrow, practically inacessible valleys and canyons such as are encountered in the Ethiopian escarpment. Here reliance must be placed on local inhabitants to treat developing hopper bands. Dusts and bran bait are the most suitable. However, bran, being a food item, is in short supply so they must resort to the use of dusts. DLCOEA is practically devoid of insecticidal dusts. Hand equipment used for putting out dusts are old and generally in poor condition and need to be at least partially replaced. DLCOEA has no equipment for applying liquid sprays by hand.

D - Other

DLCOEA is in need of light weight camping equipment such as aluminum folding cots and chairs and light weight but sturdy tents for use by field parties. With equipment presently available, several vehicles are required merely for transport whereby one should be sufficient.

They also require vehicle repair kits and tires and tubes. Often times tire tubes appear to be more patches than tube. DLCOEA could afford to spend more on basic items such as these and make spending reductions elsewhere.



VI - Relationships - DLCOEA and Ministries of Agriculture

Criticism was often heard from employees of National Ministries of Agriculture that DLCOEA wasn't pulling its own weight. Generally, these were unfair criticisms by persons unaware of the role assigned to DLCOEA. To counteract such criticism in Ethiopia, agreement was reached on the responsibilities of each and a plan of work was developed detailing each other's duties and responsibilities during this critical period. Similar action needs to be taken in all participating nations.

In general, it is considered that individual Ministries of Agriculture will have primary responsibility for controlling incipient infestations within their borders. DLCOEA will assist by supplementing national units when required, especially when nations are threatened with invasions from outside their borders. DLCOEA should concentrate its efforts on the high incidence breeding areas which pose the greatest potential problems to the six member governments, but not to the point of disregarding local situations which could have grave implications on local economies. A balance is required between concentration on primary breeding and invasion areas and providing assistance to national units on more or less localized infestations which might cause crop damage to relatively confined areas.

DLCOEA has assumed the leadership in survey and reporting responsibilities, analyzing the data gathered and forecasting future problem areas. They also provide recommendations as to the kinds and types of equipment and insecticide materials to use and supplement Ministry equipment and materials from their reserves. This is as it should be.



## VII - DLCOEA vs. FAO Regional Commissions

As currently organized, DLCOEA falls outside the framework of FAO, but is tied cooperatively to FAO through a relationship agreement. For several years discussions have been held and various avenues explored to enable DLCOEA to come within the framework of FAO without forfeiting its independence. No satisfactory agreement was reached. At its 11th regular session, the Council for DLCOEA decided it should remain an independent organization but continue the existing relationship agreement.

An organization similar to DLCOEA, known as OCLALAV, has been in existence in West Africa for several years. It has been highly successful in eliminating the desert locust threat in the sub-Saharan countries. It initially and still continues to receive substantial technical and financial assistance from France.

In other sections of the desert locust invasion area, FAO is organizing Regional Commissions. In this type of organization, locust control will be exercised on a regional basis utilizing national units operating under the direction of FAO.

The Southwest Asia Regional Commission, consists of India, Pakistan, Iran, and Afghanistan. All but Afghanistan have strong national units capable of handling most problems arising within their respective boundaries.

The Central Region, consisting of the Arabian peninsula nations and border countries including Egypt and Sudan, has proven initially incapable of conducting a concerted regional cooperative effort. Many years of training of personnel will be required and an awareness for the need for mutual assistance from member nations before it can be considered effective.

An attempt is being made to organize the North African nations of Morocco, Algeria, Tunisia and Libya. Strong national units are in existence in all but Libya.

Today the only tried and proven Regional Organizations are OCLALAV and DLCOEA. Mobility and independence of action and direction appear to be the key to their success.



DLCOEA got its "feet wet" in the Red Sea coastal campaign during the winter of 1967-68. It is becoming further acclimated due to the present invasion. Although some confusion still exists, on the whole they have done a commendable job.

The future will determine whether the Regional Commissions under the framework of FAO or the independent council type regional organizations such as DLCOEA and OCLALAV will make the most rapid progress. Evidence to date is weighted in favor of the independent regional organizations. Since FAO is primarily a technical assistance organization, action type programs necessary for effective locust control fall somewhat outside its designated scope of endeavor.

In the past there has apparently been some dissention between FAO and DLCOEA. This apparently was due to a large extent to the policies of the former director of DLCOEA which were at variance with FAO thinking. Since his resignation, these differences have largely dissolved and close cooperative relationships appear to now exist between the two organizations.



VIII - Recommendations

1. The six nations supporting DLCOEA have indicated their faith in the Organization by renewing the agreement for another five years. USAID played a large part in its establishment and has since taken an active interest in its affairs. DLCOEA now appears to be facing its first critical test. If successful, it will provide Africa with an excellent example of mutual cooperation among nations in suppressing a serious insect pest. It is in difficulty financially and technically. A rapid build-up of locusts to plague conditions appears assured without concerted effort. Even the maximum effort that can presently be launched by DLCOEA and the East African national units may not be sufficient if an extensive infestation develops as a result of invasion from the Arabian peninsula or the nations to the west. Insecticide stocks will rapidly deplete, many vehicles will not withstand the rigors of an extensive campaign, lack of pilots will limit the number of useable aircraft and a lack of an adequate number of technically trained staff will prevent peak operational efficiency. U. S. financial assistance being made available can overcome some but not all of these deficiencies.
2. U. S. financial assistance and any assistance forthcoming from other nations or organizations, should hinge on a firm commitment by DLCOEA member nations which would assure:
  - a. That they recognize the need for a realistic budget which allows for orderly replacement of equipment and materials and takes into account inflationary trends; (this was agreed to at the Nairobi Council meeting.)
  - b. That approval is received for the first 1968-69 supplementary budget of 45,000 Lbs.;
  - c. That steps are taken to assure adequate future funding to eliminate the need for continued additional outside assistance or deriving revenue from general crop protection in competition with private enterprise. DLCOEA has built up a substantial



reserve fund over the past year or two. This will be rapidly depleted, however, if a new locust plague develops, unless contributions by participating nations are increased and/or severe economic measures are instituted or substantial assistance is obtained from other sources. The U.S. grant of \$200,000 to DLCOEA should prevent a complete depletion of reserve funds during the coming year.

3. If U.S. commodity assistance is forthcoming, proper utilization needs to be assured. The provision of a U.S. entomologist, knowledgeable in locust and grasshopper control for a one to two year period appears desirable. If it is decided not to provide a long term entomologist, a short term assignment from August through November should be considered.
4. Consideration should be given to AID sponsoring one or more nationals as locust control officer or specialist trainees who would eventually be expected to replace expatriates presently employed by DLCOEA. Financially DLCOEA is unable to fully support a large number of trainees.
5. The continued presence of the U.S. pilot in East Africa is highly desirable. Perhaps his activities could be expanded somewhat to provide for occasional visits to DLCOEA's aircraft maintenance facilities at Nairobi and allow for observations which would assure that U.S. aircraft on loan to DLCOEA are properly maintained and utilized.
6. If the U.K. is unable to supply additional pilot assistance, the U.S. should consider a short term assignment between August and December 1968.
7. DLCOEA should remain a separate entity free from direction by FAO but should maintain close continued cooperation with FAO and the Anti-Locust Research Center. They should continue to request and accept technical advice and assistance from both organizations.



8. East African national units in many cases need strengthening. However, any assistance provided should be funneled through DLCOEA. It is the action arm set up by the participating governments to assure against major invasions. National units need to concern themselves primarily with the control of incipient infestations and crop protection. Cooperative interchange of personnel, equipment and materials with DLCOEA, the principal provider, and the national units, the receiver, is in effect. This is especially true in Somalia where the national unit is weak.
9. A readjustment in the types of aerial equipment utilized by DLCOEA may be in order. The present belly tanks on the Cessna aircraft create excessive drag. DLCOEA is equipping one of them with an inside tank. The Aero Commander is a questionable luxury. It is unsuitable for spraying and its maintenance and operating costs are too great for aerial survey. Personnel transportation is not alone sufficient justification for its retention.
10. DLCOEA must be watchful for fear of offending participating nations by failure to practice a complete balanced neutrality. Criticisms were received that preferential treatment was exercised in employment and assignment of equipment. These criticisms were aimed primarily at headquarters personnel assignments.
11. Personnel requirements need a close evaluation. Greater emphasis needs to be placed on the quality of personnel stationed at locations other than the Asmara headquarters.
12. Appreciable economies can be attained which would not affect organization effectiveness. Examples are unnecessary use of organization vehicles for personal use and non-essential driving, unnecessary shuffling of aircraft back and forth, and repair of personally owned vehicles at Nairobi. Tighter control appeared to be maintained at Hargeisa, Somalia than at other locations visited.
13. A system of long range as well as short range planning needs to be implemented.



14. There appears to be a lack of understanding in the field as to the division of responsibility between DLCOEA and the national units. This needs to be resolved. Broad work plans should be developed with each member nation. More specific plans could be developed at each DLCOEA operations base.
15. An overall field supervisor needs to be designated who would be responsible for providing direction and coordination of the aerial and ground units.
16. DLCOEA must be watchful not to place too great an emphasis on the theoretical rather than the practical. Highly scientific methods of prediction, detection and control need to be utilized. However, they must necessarily be limited by the technical ability of the participants. The use of meteorological data and satellite photographs of weather phenomena are a decided contribution to predicting locations of possible swarm concentrations. It is a much more refined technique than the mere use of recollection of past invasions or depending on sightings of green vegetation. However, localized conditions must be also taken into consideration rather than relying strictly on general weather patterns covering large areas.
17. During recession periods DLCOEA aircraft can be justifiably utilized on projects sponsored by institutions and research organizations which are of interest and benefit to East Africa as a whole. They can also be justifiably used on specific government projects, when adequately compensated, not in competition with the private sector. Examples being mosquito control in cooperation with Public Health Departments, Tsetse fly control, particularly the release of sterilized insects if such a project is initiated. Qualea bird control, although desirable, should be left to Conservation Departments which are more knowledgeable of methods and techniques and more closely associated with the problem.
18. The provision of locust control assistance by DLCOEA to the FAO



Central Regional Commission would be desirable when personnel and equipment can be spared from work in East Africa.

19. Consideration should be given to FAO sponsorship with possible U.S. participation in a training school on locust control to be held in East Africa, particularly Somalia, similar to training schools conducted by FAO in Morocco. In the final analysis training is the primary need of both DLCOEA and the national units.
20. Material assistance alone will not meet the objective of suppressing locust populations and holding the recession. However, extensive crop damage can be averted in East Africa through the combined efforts of DLCOEA and the national units if they are provided sound advice and encouragement and they have the will to put forth the effort needed.
21. DLCOEA personnel must get out of their minds the thought that their jobs are assured only by the presence of locusts. This produces a tendency to ignore, for control purposes, small, thin, scattered swarms which could eventually build populations back up to plague conditions. Likewise, contributing countries must be made to realize that DLCOEA is a form of insurance that can't be discontinued merely by the absence of large, potentially damaging populations.
22. The Acting Director of DLCOEA has done an excellent job of correcting many of the ills of the Organization. Now that he has been confirmed as the Director, he feels free to make changes that in the past he was hesitant to make. From his past performance it appears certain he will continue to prove his capabilities as an able administrator. He has studied in Manchester, England, and observed the administration of pest control programs in many parts of the world except for the United States. It would appear highly desirable for AID to consider him for short term participant training in the U. S.



IX - Future Prognosis

In Ethiopia those uncontrolled desert locust swarms which entered the escarpment area in May and penetrated the Tacozze and Gash river valleys have reached maturity. Initial egg laying was in progress prior to mid June. By late June the first hatch was recorded. Hopper bands, and later, swarms forming from these hatchings if left uncontrolled can be expected to cause some crop damage in localized areas of Eritrea and Tigre provinces. To a great extent hopper bands will be confined to areas difficult of access, requiring control by hand, utilizing dust and baits spread by local inhabitants. Progeny of swarms, presently believed to be in the Sudan Republic, can be carried on winds from the north and west into the northern highlands of Ethiopia in August-September supplementing present populations at a time when crops are up causing serious agricultural damage.

Swarms presently in Somalia should tend to mill around in the horn east of Berbera. Some localized crop damage can be expected. Heavy rainfall should promote extensive breeding and egg laying. If these are allowed to escape, they could produce swarms which could later invade Kenya and possibly Tanzania and Uganda.

If an invasion of swarms originating in the Arabian peninsula occurs from mid June onwards, these swarms can be expected to pile up along the Intertropical Convergence Zone which is presently established along the northern Somali escarpment and the Ethiopian railway line. An all out effort in this area, if the expected invasion occurs, could not only prevent a later invasion of the Ogaden and nations to the south but could prove to be the deciding factor in averting another locust plague. In the event weather conditions prevent this invasion from occurring, uncontrolled breeding can be expected in the Hadhramout of South Arabia. Extensive breeding in this area could greatly increase populations and provide a reservoir for a much heavier invasion of East Africa later on, or alternatively, East Africa could be bypassed completely with the swarms moving east to Iran, Pakistan and India or back north to central Arabia for additional breeding and population build-up.



From the standpoint of locust control as a whole, even though some damage might be sustained in Ethiopia and Somalia, an invasion of East Africa at this time could be considered desirable. The swarms would be confined to a relatively small area and readily accessible. The existing Regional Organization (DLCOEA) and the East African National Units combined have the control capability to cope with any reasonable infestation. This capability is seriously lacking in the Arabian peninsula.

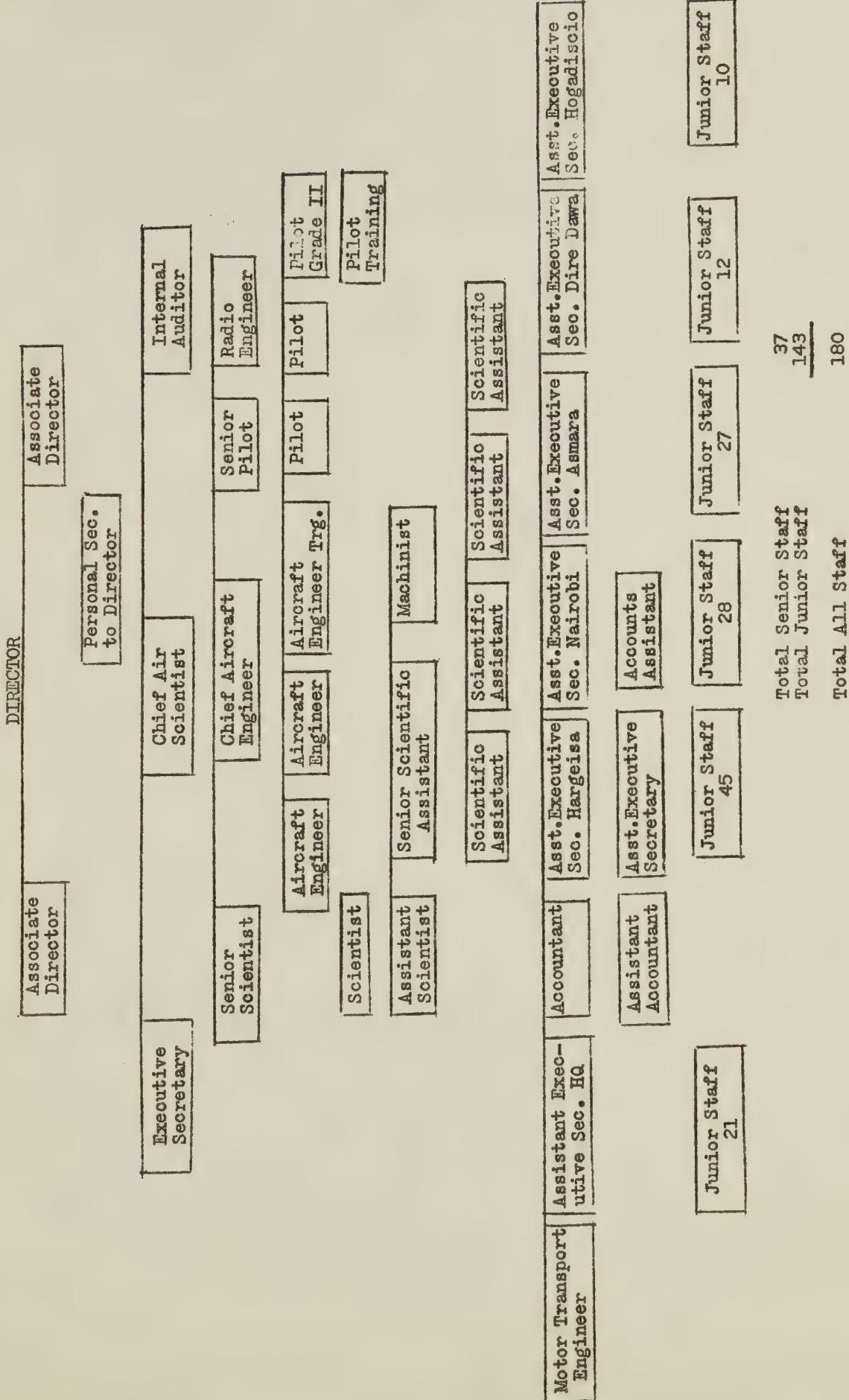
Of considerable interest and significance is the sudden upsurge of Locusta migratoria populations. This locust is potentially of greater danger than the desert locust. Countries within the outbreak area of Locusta migratoria should be encouraged to increase their vigilance for this pest. Of particular importance for survey would be the area around the Niger Bend.



DESSERT-LOCUST CONTROL ORGANIZATION FOR EASTERN AFRICA

Appendix I

Organization Chart Senior Staff





Appendix II

Vehicle Inventory  
March 1, 1968

<u>Make</u>	<u>Year</u>	<u>Asmara</u>	<u>Dire Dawa</u>	<u>Hargeisa</u>	<u>Mogadiscio</u>	<u>Nairobi</u>	<u>Total</u>
Landrover	1958	6				2	6
	1959					10	2
	1960			2		2	12
	1961	3	6	12		2	23
	1962			2		2	2
	1966	9	2	5	2	2	18
	<b>Total</b>	<b>18</b>	<b>8</b>	<b>17</b>	<b>4</b>	<b>16</b>	<b>63</b>
Bedford						3	5
5-Ton Truck	1960	1		1			1
	1961	1				2	9
	1962			7			10
	1963	4	5	1		2	4
	1965			2			
	<b>Total</b>	<b>6</b>	<b>5</b>	<b>11</b>	<b>2</b>	<b>5</b>	<b>29</b>



### Appendix III

Insecticide Inventory  
March 1, 1968

\*Total in Tons



DESERT LOCUST CONTROL ORGANIZATION FOR EASTERN AFRICA  
 SIXTH MEETING OF THE TECHNICAL COMMITTEE  
 NAIROBI, KENYA.  
 11 June, 1965.

Item 3Working Paper No. 95:67/68

Report of the Sixth Meeting of the Technical Committee

## PARTICIPATION

CONTRACTING GOVERNMENTSETHIOPIA:

Mr. Zegeye Abberu	Ministry of Agriculture, ADDIS ABABA.
Mr. Bekel Desta	Ministry of Agriculture, ADDIS ABABA.

FRANCE:

Mr. Roy Jean (Chairman)	Ministère de l'Agriculture, PARIS.
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KENYA:

Mr. Jotham Bartholomew Muthamia	National Agricultural Laboratories, NAIROBI.
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SOMALI REPUBLIC:

Mr. Abdulrhaman Elmi	Ministry of Agriculture, MOGADISHU.
Mr. Mohamed Hizam Musleh	Ministry of Agriculture, MOGADISHU.

UGANDA:

Mr. H. D. Mubbira	P. O. Box 7065, KAMPALA.
Mr. Sabiiti Kyamuhangire	Ministry of Agriculture, Forestry & Co-operatives, ENTEBBE.



CONSULTANT

Mr. P. T. Haskell

Ministry of Overseas  
Development,  
UNITED KINGDOM.OBSERVERS

Mr. Gurdas Singh

Desert Locust Specialist,  
Plant Industries Division,  
F.A.O. of the United Nations,  
ROME Italy.

Mr. Rafik Skaf

F.A.O. Plant Protection &  
Locust Control Advisor,  
MOGADISHU, Somali Republic.

Mr. George Cavin

USDA/AID,  
WASHINGTON D.C. U.S.A.DLCO-EA

Mr. Adefris Bellehu

Acting Director.

Mr. Mohamed Abdi Ghelle

Associate Director.

Mr. Begashaw Abebe

Executive Secretary.

Mr. D. C. Paterson

Acting Executive Secretary.



OPENING OF THE SESSION.

The Sixth Meeting of the Technical Committee was opened by Mr. J. B. Muthamia, of the National Agricultural Laboratories, Nairobi, Kenya, who welcomed the Delegates and Observers to this meeting.

Item 1. MATTERS ARISING FROM THE 5TH SESSION OF THE  
TECHNICAL COMMITTEE AND THE REPORT OF THE  
DIRECTOR.

The Committee recommended the Report of the Acting Director for the period 1966/67 be approved and the Accounts be published; in addition the Committee recommended that the Report of the Director for the period 1965/66 should be published together with the Report for 1966/67, but that a preface should be printed with these combined Reports pointing out that the policy of the Organisation had been altered by agreement with the contracting Governments between the periods covered by these two Reports.

Item 2. LOCUST SITUATION IN EASTERN AFRICA

The Technical Committee listened to a report from the Acting Director on the latest locust situation in the region, who pointed out that during May a total of 53 swarms had been reported from Ethiopia and the Somali Republic, three of which moved south-west across the Red Sea from Saudi Arabia. Several scattered swarms are still moving in the highland areas, and hoppers, both of the desert and migratory locust, were to be found in the area of Dire Dawa and Mille.

The Acting Director pointed out that because of the heavy rains which had occurred over large areas of the region, there was a strong possibility that there could be large-scale breeding in several areas.

The Technical Committee wished to draw the attention of the Council to the fact that the central position of the Eastern African region makes it liable to be invaded by swarms originating both in the east and west of its boundaries, and hence, the present situation in Eastern Africa was partly a reflection of the international nature of the desert locust problem. The Committee also pointed out that the region contains vast areas which can provide a sequence of seasonal breeding areas in which swarms can mature rapidly and breed. Hence, the present situation must be regarded as alarming, not only because of the immediate position, but because of possible developments.



The Technical Committee therefore strongly urge the Council to allow the Organisation all the facilities necessary to cope with the situation, bearing in mind that the period from now until early 1969 will be a critical one during which breeding and swarm formation is liable to occur in Ethiopia and the Somali Republic with the possibility in early 1969 of swarm movements towards the south into Kenya, Tanzania and Uganda.

Therefore the Technical Committee, in view of this current situation recommend to Council that the Organisation be strengthened according to the following suggestions to allow it to combat the threat directly and to enable it to supplement the efforts of national teams. The Technical Committee further urged that contracting Governments strengthen their own national units to this end.

To implement the above, the Technical Committee made the following recommendations to Council.

- a. That the main operational base at Hargeisa be strengthened, not only to offer an adequate base for operations, but to allow of supplementary support to national teams;
- b. That the strategic reserves of equipment and supplies, such as transport and insecticides, of DLCO-EA, be strengthened to supplement the national reserves of the contracting Governments;
- c. That the DLCO-EA air unit be maintained fully operational in the critical period now approaching by measures to be found in the supplementary budget below. In this connection the Committee suggested that it was particularly important that the contracting Governments allowed free and unrestricted movement of aircraft throughout the region without any administrative delay;
- d. That the Organization and the National Units carry out effective locust surveys over the whole region with a combination of aerial and ground operations;
- e. That all research projects should be held in abeyance until the next Council meeting, with the exception that the Acting Director be empowered to activate those projects, either in whole or in part, that had a direct bearing on locust control;
- f. That the Organization should not undertake any agricultural aviation work until the desert locust situation improves.



## Item 3.

PROGRAMME OF WORK

The Technical Committee considered the Programme of Work and Budget for 1968/69 (Working Paper No. 97a 67/68), along with the supplementary Budget, and recommended the following for consideration and approval of the Council:

- a. The Committee recommends that the Council adopts the proposed budget of 1968/69 amounting to E.A. £ 229,250.
- b. The Committee noted that in addition to the above budget to keep the Organization at its present operational level and prevent further deterioration of equipment and materials an amount of £ 45,000 was immediately necessary. This sum comprises the following items:-
  - i. Replacement of Vehicles E.A. £ 12,000
  - ii. Replacement of Insecticide E.A. £ 18,000
  - iii. Replacement of Aircraft Radios E.A. £ 12,000
  - iv. Replacement of Operational Equipment E.A. £ 3,000
 E.A. £ 45,000
- c. However the Committee suggests that in future the position of insecticide stock must be revised in accordance with the locust situation and arrangements be made to acquire insecticide by direct purchase or loans from any available sources.
- d. In view of the present critical locust situation and its future likely development, and the suggestion made by the Technical Committee to meet these, a further expenditure of approximately E.A. £ 70,000 was considered necessary. The breakdown and justification of this sum is given below.

## DIVISION I.

Supernumerary Posts

<u>Item No.</u>	<u>No. of Posts</u>	<u>Details of Estimate</u>	<u>Total</u> <u>E.A. £</u>
1	1	Pilot B.1 + 20%	2,005
2	1	Aircraft Engineer B.1 + 20%	2,005
3	1	Senior Field Supervisor B.1 + 20%	2,005
4	4	Asst. Aircraft Mechanics C.3-1	4,224
5	-	Gratuities	1,927
6	-	Passages	1,172
7	-	All Allowances	4,590
			£17,928



## DIVISION II

Contingent Expenditure

<u>Item No.</u>	<u>Details of Estimates</u>	<u>Total</u> <u>E.A.f</u>
1	Vehicles	22,000
2	P.O.L. Motor Vehicles	5,000
3	P.O.L. Aircraft	5,000
4	Maintenance of Aircraft	4,000
5	Maintenance of Vehicles	2,000
6	Equipment and Supplies	400
7	Insurance	1,000
8	Miscellaneous Other Charges	900
9	Labour	<u>21,762</u> <u>£79.990</u>

The Technical Committee noted that the Council at its 11th Regular Session decided to ear-mark annually a sum of up to £20,000 for replacement of equipment and material. The Committee felt that this was vital to the proper functioning of the Organisation and recommended that henceforth this arrangement should be reflected in this Budget and the future Budgets of the Organisation.



DESERT LOCUST CONTROL ORGANIZATION FOR  
EASTERN AFRICAREPORT OF THE 13TH REGULAR SESSION OF THE COUNCIL  
NAIROBI - KENYA  
12TH - 13TH JUNE, 1968INTRODUCTION

The Chairman, H.E. Dejazmatch Ghermatchew Tecle Hawariat, Minister of Agriculture, Ethiopia, has, in accordance with Resolution No. 319 of the 12th Regular Session held in Rome in November, 1967 and at the kind invitation of the Government of Kenya, decided to convene the 13th Regular Session of the Council in Nairobi from 12th to 13th June 1968.

In accordance with the procedures the Chairman invited all the six Contracting Governments of the Desert Locust Control Organization for Eastern Africa to be represented by delegates, observers and consultants at the Session which was proceeded by a meeting of the Technical Committee held on 11th June 1968, attended by technical officers designated by Contracting Governments, the DLCO-EA consultant, the F.A.O. and the U.S.A.I.D. representative who attended the Technical Committee in the capacity of observer.

The 13th Regular Session of the DLCO-EA was opened by the Chairman and Minister of Agriculture, Ethiopia, who welcomed the delegates, observers and consultants attending the Session. The Chairman thanked H.E. Hon. Bruce McKenzie, Minister of Agriculture, Kenya, and his Government for inviting him to convene the Session in Nairobi and for making available the necessary facilities for the 13th Regular Session of the Council.



Furthermore, the Chairman, in his opening address, stressed the need for stronger vigilance and readiness in view of the present alarming Desert Locust situation in the Arabian Peninsula and in Eastern Africa. The Chairman pointed out the need to make all possible arrangements in order to keep a recession in being by organising immediate control of the infestations observed within Eastern Africa. The Chairman indicated that the DLCO-EA, with the assistance of National Locust Control Units in Ethiopia and Somali Republic, was fully engaged in control activities against scattered but very intense infestations over 1800 square miles during the last six months. In addition, the DLCO-EA has, at the request of the Contracting Governments and in accordance with earlier resolution and authorisation of the Council, carried out pest control activities against other insect pests for which full cost of services was refunded for any such extra services rendered by the Organization's staff and equipment.

In reply the Minister of Agriculture, Kenya, welcomed the delegates, consultant and observers, and at the same time expressed his concern over the present locust situation now facing Eastern Africa, especially infestation in the neighbouring area of the Arabian Peninsula, and directed the attention of the Council to take into consideration this problem while discussing items on the Agenda.



PARTICIPATIONCONTRACTING GOVERNMENTSETHIOPIA

## Chairman and delegate:

H.E. Dejazmatch Ghermatchew Tecle Hawariat,  
Minister for Agriculture and Forestry,  
Addis Ababa.

## Alternate:

Ato Zegeye Aberru,  
Assistant Minister,  
Plant Production and Protection Division,  
Ministry of Agriculture and Forestry,  
Addis Ababa.

## Associate:

Ato Bekele Desta,  
Ministry of Agriculture and Forestry,  
Addis Ababa.

FRANCE

## Delegate:

Monsieur J. Roy,  
Ingenieur en Chef des Services de l'Agriculture,  
Service de Co-operation Technique Outre-Mer,  
33-37, Rue Chanzy,  
Paris.

KENYA

## Delegate:

H.E. Hon. Bruce McKenzie, E.G.H., D.S.O., D.F.C., M.P.,  
Minister for Agriculture and Animal Husbandry,  
Nairobi.

## Alternate:

Hon. W.C. Murgor,  
Assistant Minister,  
Ministry of Agriculture and Animal Husbandry,  
Nairobi.

## Associate:

Mr. P. Morgan,  
Assistant Secretary,  
Ministry of Agriculture and Animal Husbandry,  
Nairobi.



SOMALI REPUBLIC

## Delegate:

H.E. Mr. Ali Omer Scego,  
Minister for Agriculture,  
Mogadiscio.

## Alternate:

Mr. Abdul Rahman Elmi,  
Director General,  
Plant Protection and Locust Control Department,  
Ministry of Agriculture  
Mogadiscio.

## Associate:

Mr. Mohamed Izam Musleh,  
Acting Director,  
Plant Protection and Locust Control,  
Ministry of Agriculture  
Mogadiscio.

TANZANIA

## Delegate:

H.E. Hon. D.N.M. Bryceson,  
Minister of Agriculture, Forestry and Wildlife,  
Dar-Es-Salaam.

UGANDA

## Delegate:

H.E. Hon. A.K. Balinda,  
Deputy Minister of Agriculture, Forestry & Co-operatives,  
Entebbe.

## Alternate:

Mr. Mubiru,  
Agricultural Officer,  
Kwanda Research Station,  
Kampala.

## Associate:

Mr. Sabiiti Kymuhangire,  
Ministry of Agriculture, Forestry and Co-operatives,  
Entebbe.



OBSERVERSFrom F.A.O. of the United Nations

Mr. Gurdas Singh,  
Desert Locust Specialist,  
Plant Industries Division,  
Rome, Italy.

Mr. Rafik Skaf,  
F.A.O. Plant Protection and Locust Control Adviser,  
Mogadiscio, Somali Republic.

CONSULTANT

Dr. P.T. Haskell,  
Director,  
Anti-Locust Research Centre,  
London.

OBSERVER

Mr. G. Cavin,  
Entomologist,  
USDA/AID, Washington, D.C.,  
U.S.A.

D.L.C.O. for E.A. Staff Members

Ato Adefris Bellehu, Acting Director

Mr. Mohamed Abdi Ghelle, Associate Director

Ato Begashaw Abebe, Executive Secretary

Mr. D.C. Paterson, Acting Executive Secretary.



RESOLUTION OF THE COUNCIL

Item 1 - Adoption of the Agenda

The Council

320. ACCEPTED the Agenda as amended and enclosed in Appendix 1.

Item 2 - Present Locust Situation in Eastern Africa

The Council

321. HEARD a Statement on the present locust situation from the Acting Director of DLCO-EA, supplemented by the Consultant, and recognised that the Desert Locust situation is threatening and needs all possible efforts by the Organization in co-operation with the national teams, to meet it.

CONSIDERED it to be of the greatest importance to mount a control campaign within the succeeding months in north-west Somali Republic and the corresponding area of Ethiopia.

Item 3 - Report and Recommendation of the 6th Session of the Technical Committee

The Council

322. REVIEWING the recommendations of the Technical Committee and recognising the critical locust situation in Eastern Africa,

AGREED to the Programme of Work for 1968/69 (Working Paper Nos 97 & 97A: 67/68) submitted together with the detailed comments of the Technical Committee, as contained in the Report of the 6th Meeting of the Technical Committee (Item 2 - paras. a to f).



Item 4 - Programme of Work and Estimate of Budget for the Financial Year 1968/69

The Council

323. CONSIDERING the Working Paper 97A: 67/68, unanimously approved the Annual Budget for the year 1968/69, totalling K £229,250 to be made up of K £210,000 from contributions and K £19,250 from savings and other revenue. Furthermore, the Director was authorised to utilize K £39,000 in consultation with the Chairman keeping in view the requirements as demanded by the locust situation. An additional of K £18,000 was approved for insecticides which has already been ordered.

Item 5 - Audited Statement of Accounts for 1966/67

The Council

324. EXAMINED the Audited Accounts for 1966/67 as presented in Working Paper No. 98: 67/68, and while accepting the Accounts, emphasized that any Government requesting the services of DLCO-EA for agricultural work should be responsible for the timely payment for the operations undertaken on its behalf.

Item 6 - Report of the "Special Organizational and Methods Commission for Desert Locust Control Organization for Eastern Africa"

The Council

325. DISCUSSED the possibility of reviewing the Report of the Commission at this Session and

NOTED that in view of the present locust situation, it was not appropriate to consider the Report as a whole and DECIDED that only that portion of the Report relating to plague periods should be considered during the present Session. The remainder to be discussed at the next Regular Session of the Council.



RECOGNISING the present requirements of the Organization,  
the Council

ACCEPTED the following recommendations from the Commis-  
sion's Report.

"For reasons beyond the Organization's control it is possible that it will be faced with combating swarms within the Eastern Africa region, and with the development of a plague.

"At the beginning of a plague, it is recommended that -

" Insecticide reserves be augmented as a matter of great urgency, bearing in mind that deliveries may take 6 months or more.

" The Air Unit is strengthened under the direction of a specially recruited team leader, who will take charge of the whole control operation, including the ground units working in co-operation with the aircraft.

" That the ground units are expanded by the addition of new vehicles and equipment, and staff - possibly by secondment - together with volunteers such as Peace Corps and Voluntaries de la Paix.

" That the maintenance facilities of the Hargeisa Base for aircraft and vehicles are expanded.

" That the present radio network is reviewed to ensure the closest possible link between aircraft and ground units.

" That operations are planned to kill locusts in the major strategic concentration areas where every unit of insecticide can be used to its greatest effect.

" That the fullest use of advice from D.L.I.S. is made when preparing operational plans.



" That initially priority is given to swarm control during June - September in the Hargeisa-Borama concentration area, which can be regarded as the locust 'gateway' to East Africa.

" It is stressed that operations in areas difficult of access, or in areas where locusts are dispersed, can lead to heavy expenditure for little result. Although it may be difficult to local authorities, it is recommended that operations should not be attempted in such areas if there are more worthwhile targets elsewhere.

" That research on control techniques is intensified with the help of visiting scientists; particularly the investigation of the conditions under which new concentrated insecticides, highly toxic to locusts, can be most effectively and safely applied."

FURTHER examined the recommendations made under Chapter B 12 "Control of Policy by the Council" and agreed that one or two members of the Council visit the Organization's stations each year prior to the Council Session. In this respect it was agreed that the Organization would meet expenses of the air travel of such members, while the host Government would provide facilities for local travel including hotel expenses.

Item 7 - Interviewing of the Candidates for the Post of Director

The Council

326. IN RELATION to its previous Resolution No. 275 adopted at the Tenth Regular Session

DECIDED that Ato Adefris Bellehu, Acting Director, was eligible to be a candidate for the post of Director

In accordance with Resolution No. 311, the Chairman invited the Contracting Governments to nominate suitable



candidates for the post of Director. In response, the following candidates were nominated by the Governments of Ethiopia and Uganda:

Uganda	...	...	Mr. F.D.R. Gureme
Ethiopia	...	...	Ato Adefris Bellehu

Having considered the qualifications of the above candidates, while bearing in mind the critical locust situation facing the Region,

DECIDED unanimously to appoint Ato Adefris Bellehu as Director for a period of two years as from 15th November, 1968.

#### Item 8 - Election of Chairman and Vice-Chairmen

##### The Council

327. DECIDED unanimously that the Minister of Agriculture, Kenya, be appointed Chairman of the Council from 1st July 1968, and appointed representatives from Tanzania and Somali Republic as Vice-Chairmen from the same date.

#### Item 9 - Other Business

##### The Council

328. RECOGNISING the need for substantial extra assistance to the Organization

DECIDED to approach the possible donor countries and International Organizations to examine with them the possibility of provision of such support. As a result of this approach representatives from France, the United Kingdom, the United States of America, and the UNDP representative and F.A.O. Deputy Regional Representative met with the Council on 13th June, 1968.



ACKNOWLEDGEMENTS**The Council**

EXPRESSED their deep gratitude to the Government of Kenya for inviting the Chairman to convene the 13th Regular Session in Nairobi and for the facilities provided.

EXPRESSED its deepest gratitude to the Government of the United States of America for extending assistance in the form of locust control equipment and insecticide to the value of U.S. \$200,000 in response to the request made by the six Contracting Governments in order to meet the present emergency situation facing East Africa.

EXPRESSED gratitude to the Chairman, H.E. Dejazmatch Ghermatchew Tecle Hawariat for his valuable contribution in establishing close co-operation between the six Contracting Governments and for the tactfull manner in which he had conducted with such expediency the business of the Session at this and previous meeting.

EXPRESSED gratitude to the :-

F.A.O.

U.N.D.P.

The Embassy of the United States

H.M.G. High Commissioner, Nairobi

French Embassy, Nairobi for attending the 13th Regular Session at the request of the Chairman of the DLCO-EA Council and for their co-operation.

RECORDED its appreciation for the excellent work conducted by the Acting Director, Associate Director and all staff members of the DLCO-EA in executing the affairs of the Organization.



RECORDED its thanks to the members of the Special Organizational and Methods Commission for DLCO-EA for their work and report.

RECORDED its appreciation of Mr. D.L. Blunt for his past contribution to the locust control organization.

EXPRESSED gratitude for the observer from F.A.O., the consultant and Mr. G. Cavin of the USDA/AID for their valuable contribution in the discussions.



DRAFT CABLE

ADMINISTRATOR UNDP VIENNA

Grateful for providing through FAO assistance amounting to \$22,000 for insecticide STOP The Council of the Desert Locust Control Organisation with member Governments Ethiopia France Kenya Somali Republic Tanzania and Uganda now in session at Nairobi consider present locust situation particularly in Ethiopia and Somali Republic as very serious and beyond the control of present resources of the Organisation.

The Council requests UNDP to provide further emergency Assistance up to \$50,000 for insecticide and vehicles STOP Council also approached USAID, Government of United Kingdom and France for assistance amounting to \$200,000 for vehicles insecticide personnel and equipment

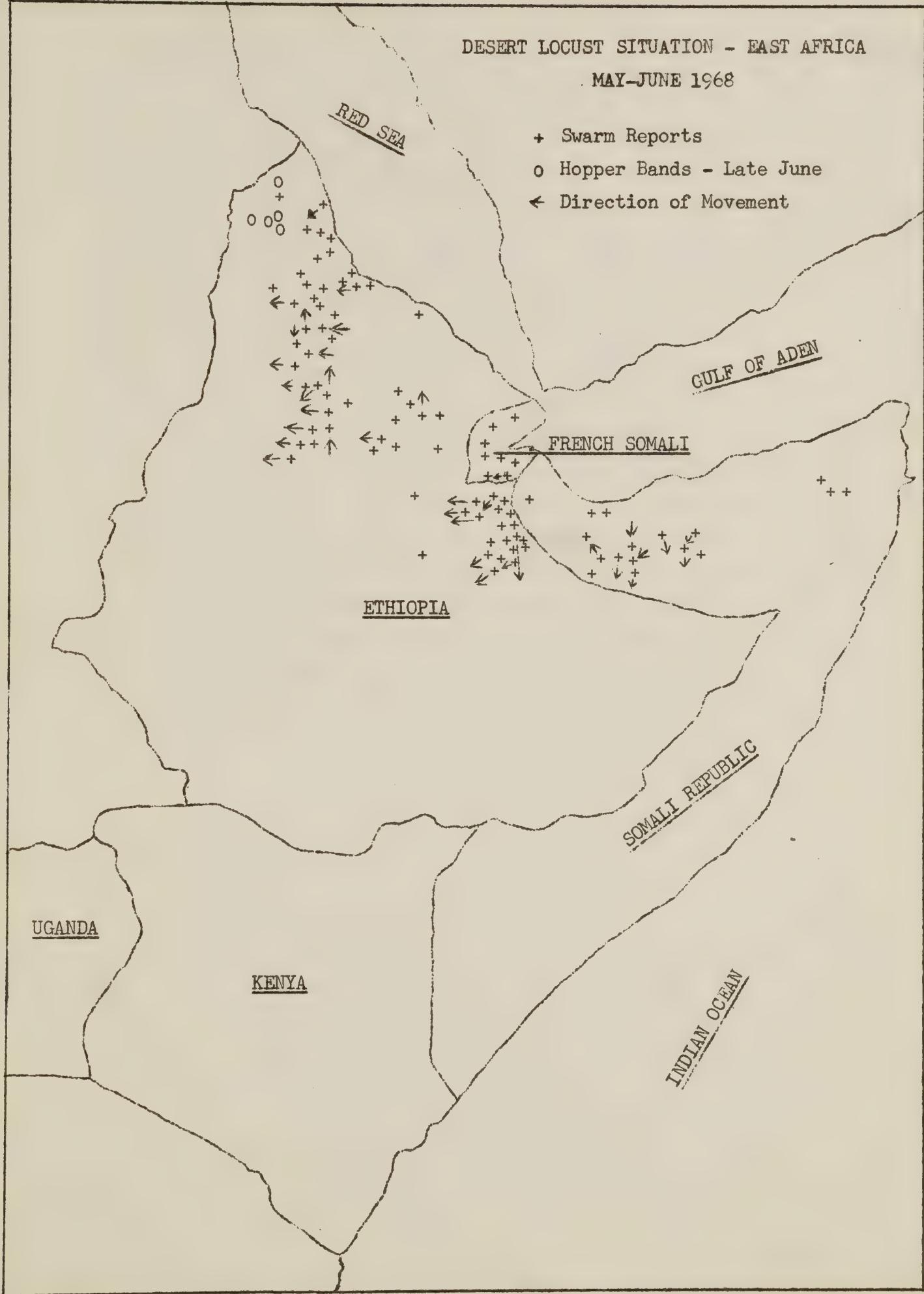
CHAIRMAN  
DESERT LOCUST CONTROL ORGANISATION



DESERT LOCUST SITUATION - EAST AFRICA

MAY-JUNE 1968

- + Swarm Reports
- o Hopper Bands - Late June
- ← Direction of Movement





#### ACKNOWLEDGEMENTS

I wish to express my sincere appreciation and gratitude to the Director, DLCO-EA, Ato Adefris Bellehu, and his staff who provided me with ready access to all DLCO-EA's installations and operational records; to Mr. Charles A. Temple, pilot, USDA/AID, whose untiring efforts have contributed so much towards developing effective locust control in East Africa; to Dr. John Fischer, Chief Agriculturist, and Mr. Sam Logan, AID/Ethiopia, for their constant support and backup; to Dr. Peter Haskell, Director, Anti-Locust Research Centre, and Mr. Gurdas Singh, Locust Control Specialist, FAO, for providing detailed background information of the present locust build-up; and to Mr. D. R. Shepherd, Director, Plant Pest Control Division, ARS, USDA, and Dr. Francis LeBeau, Director, AID/Agriculture for Africa, who provided me with this opportunity to review the locust situation in East Africa and observe the operations of DLCO-EA.





